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visual magnitudes of all stars recorded as fainter than 7.5 magnitude in Argelander's *Durchmusterung*, lying in the zones between north declination 0° to 20° . In a few years they hope to complete the investigation to the North Pole.

This research is the most accurate and complete of modern researches in the direction of photometric study of stellar magnitudes.

ASTROPHOTOGRAPHIC CHART.

Seven of the associated observatories have taken more than one-half the required catalogue plates. All these plates will be taken in two or three years.

The measurement of the catalogue plates was begun at the Paris Observatory.

The chart plates will not be completed probably until 1900.

ASTRONOMICAL PHOTOGRAPHY.

In volume III. of the Lick Observatory publications are reproduced several fine enlargements of lunar photographs taken with the 36-inch refractor cut down to eight inches. These enlargements were made by Dr. L. Weinek, of the Prague Observatory. In addition Dr. Weinek has published some excellent enlargements of moon photographs taken by M. M. Loewy and Puiseux at Paris.

In February, 1895, the Royal Astronomical Society presented its Gold Medal to Dr. Isaac Roberts for his photographs of star clusters and nebulae published in 1894. These superb photographs were taken with silver-on-glass reflector of 20-inch aperture and about 100 inches focal length. Professor Barnard, of the Lick Observatory, exhibited, at the R. A. S., an exquisite set of sixty positives, on glass, of stars and comets. The publication of these photographs is under consideration by the Society. The Council of the R. A. S. is also at work on a method for reproducing the fine photo-

graphs recently made and for making the reproductions permanent.

VARIATION OF LATITUDE.

Dr. Chandler showed that there are two terms in the variation of latitude. One term with a period of a year, the other with a period of 428.6 days. He suggested that the pole rotates, not in a circle, but in an ellipse with revolving line of apsides.

During the year there was published the results of observations made in various parts of the world, including Prof. Doolittle's work at Bethlehem, Pa., and Prof. Davidson's observations at San Francisco.

NEW OBSERVATORY.

Mr. Percival Lowell, of Boston, established an observatory at Flagstaff, Arizona, at an elevation of 7,300 feet above sea level. His principal instrument was formed by a combination of two telescopes with apertures of 18 and 12 inches. These telescopes were mounted like a twin instrument.

Mr. Lowell, Professor W. H. Pickering and Mr. Douglass have given most of their time to the study of Mars. Extensive reports have been made in *Astronomy and Astrophysics*. J. K. REES.

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CURRENT NOTES ON ANTHROPOLOGY (X.).

IS CRANIOLOGY A SCIENCE?

Two years ago (June, 1893) I pointed out in these notes how completely craniology, as it has been pursued, has failed of the promises which Broca and Retzius and its other founders made for it.

A far more forcible and detailed indictment of its inefficiency has just appeared from the pen of Professor Burel von Török, Director of the Anthropological Museum at Budapest, himself an eminent craniologist, in the '*Archiv für Anthropologie*,' Band XXIII. He says of the science: "All the great possibilities which were attributed to

it have proved illusory." The causes of this utter failure he finds mainly in the false methods which have been pursued; and partly in expecting from it results which in the nature of things it could never reach.

He does not give it up as worthless, but suggests more minute and extended investigations and measurements, reduced by mathematical formulas to averages and means, which will indicate probabilities, the higher as the observations are extended. He exemplifies his suggestions by several collections of Aino skulls, which he endeavors to analyze by numerous and extended calculations.

No one can deny the justice of his criticisms, and in a general way we must grant the correctness of his procedure; but, after all, it seems to me that his own method of means lacks the necessary noting of the frequency of extremes; in other words, it fails just as the mean temperature, monthly or annual, of a locality is practically no guide whatever to its climate, and fails for medical purposes. The range, daily and weekly, etc., is the only temperature test. The analogue to this, if I apprehend his method, Prof. von Török does not give in craniology. His article, however, is most important as pointing out present deficiencies.

A STUDY OF THE GUAYCURU.

A BOOK which is at once a 'thing of beauty' and a work of solid instruction is one by Guido Boggiani, entitled 'I Caduvei; Viaggi d' un Artista nell' America Meridionale' (Roma, Loescher & Co. 1895). The Caduvei are the Indians of the Chaco, better known as the Guaycurus, among whom the author spent many months studying their habits, arts and mode of life. He presents his observations in a pleasant literary form, and his pages are adorned with more than a hundred admirable illustrations, while a well-drawn map enlightens

the reader as to the geographical relations of the journey. So much in the latter direction is new that the Geographical Society of Italy has officially joined in the publication.

The Americanist is especially benefited by an 'Historical and Ethnographical Study,' by Dr. G. A. Colini, added to the volume. It presents a well-arranged vocabulary of the dialect, with remarks on its grammar and affiliations, and a review of what previously has been written about them. The art designs of the tribe are especially interesting and are exemplified by numerous illustrations.

WHY THE JAPANESE CONQUERED.

THIS is the title of an article by Otto Ammon in the *Naturwissenschaftliche Wochenschrift*, March, 1895. It is appropriate for comment here, because the author announces that the true answer is an anthropologic one; the Japanese conquered because they had a class of nobles, who were the virtual rulers of the nation, and who were of another and higher race than the lower classes. For this statement he quotes Dr. Doenitz and Professor Baeltz; and from what higher race, think you, they are descended? From the Semites! Not the 'ten lost tribes,' as one would naturally suppose, but from the ancient Akkadians of Babylonia!

This higher type he defines as narrow faced and with long skulls (dolichocephalic). Generalizing further, the author finds that in Europe, too, the higher type has these characteristics. The finest examples are naturally among the Germans, and the best of all was old General Von Moltke himself. The author indulges in gloomy anticipations about France, because it has destroyed the power of the old nobility, and about the present condition of Europe generally, because the political influence of the higher classes is diminishing, and individuals of a

lower ethnic type are coming to the front in statesmanship.

It is not likely that many citizens of the United States will deeply sympathize with our author in this anthropological pessimism.

D. G. BRINTON.

CURRENT NOTES ON PHYSIOGRAPHY (XI).

PHYSIOGRAPHY OF CUBA.

MUCH excellent physiographical material may be found in R. T. Hill's recent 'Notes on the Geology of the Island of Cuba' (based on a reconnoissance made for A. Agassiz; Bull. M. C. Z. xvi., 1895, 243-288, maps and plates). One chapter, entitled 'Geologic history recorded by the topography,' is an excellent example of physiographic methods, which the author knows so well how to employ. The mountains of the interior are described as residual masses rising above a dissected peneplain; while the coast, especially around the eastern end of the island, is fringed with sea-cut benches terminating inland in strong sea cliffs. Hill differs from certain other writers in not regarding the ragged outline of Cuba as indicative of submergence, no downward movement being proved since the beginning of Tertiary time.

GEOLOGIC ATLAS OF THE UNITED STATES.

THE folios of maps and text issued by the United States Geological Survey are providing sound physiographic descriptions of various parts of the country. One of the latest, the Estillville sheet, including parts of Kentucky, Virginia and Tennessee, by Campbell, classifies the surface forms with reference to the two well-marked peneplains that have been produced in the Appalachian province: the Cretaceous peneplain of the now dissected uplands; the Tertiary peneplain of the valley floors, now trenched by the rivers. The head of Powell's valley, included in this map, is a region of remarkable geological and topographical interest,

well adapted to summer field-work for the geological students of southern universities. It may be noted that in naming the three main divisions of the Appalachian province, Campbell does not employ the usual term, Alleghany plateau. While the central division is all included in the 'Appalachian valley,' comprehending the linear ridges as well as the associated lowland, and while the diverse forms of the eastern division are named the 'Appalachian mountains,' yet the western division is called 'the Cumberland plateau and the Alleghany mountains;' no general name being here suggested. It seems unfortunate that the many similar features of this division should not be taken as sufficient reason for giving it some single general name, under which sub-divisions might be afterwards recognized when needed.

DE LAPPARENT ON GEOMORPHOGENY.

PROFESSOR A. DE LAPPARENT, president of the Société de Géographie at Paris, contributes an article on *La Géomorphogénie* to the *Revue des questions scientifiques* for April, based in good part on American writings on this subject. He applies the physiographical methods to certain French problems, calling especial attention to the diversion of the Moselle from the Meuse to its present course below Toul. Few foreign writers have shown so full an appreciation as is here manifested of the systematic sequence that characterizes the development of topographical forms during the long process of baselevelling a region.

BIBLIOTHECA GEOGRAPHICA.

THE *Gesellschaft für Erdkunde* of Berlin has for many years published in its *Zeitschrift* an annual summary of geographical literature prepared by its secretary, Dr. Koner, from 1853 until his death in 1887. The summary was continued for 1887 and 1888 by Fromm, for 1889 by Wolfsteig, and for 1890 by E. Wagner. Twenty-five years